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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
REDDY, KARUNA P	
ART UNIT	**PAPER NUMBER**
1796	

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04/15/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/562,140	ADACHI ET AL.	
	Examiner	Art Unit	
	KARUNA P. REDDY	1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10,12-21 and 23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10,12-21 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *3/14/2008*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

   Applicant's submission filed on 12/28/2007 and 2/28/2008 has been entered. Claim 1 is amended; claims 11 and 22 are cancelled. Claims 1-10, 12-21 and 23 are currently pending in the application.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

3. Claims 1-4, 7-10, 12-21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mertens et al (WO 00/53644).

   It is noted that WO 00/53644 (WO) is being utilized for date purposes. However, since WO is not in English, US equivalent for WO, namely, Mertens et al (US 6, 605, 673 B1) is referred to in the body of the rejection below. All column and line citations are to the US equivalent.

Mertens et al disclose a powdery crosslinked polymer constituted of 55 to 99.99 wt% of polymerized ethylenically unsaturated monomers which contain acid groups; 0.1 to 5.0 wt% of one or more polymerized crosslinking agents and 0 to 30 wt% of a water soluble polymer. The crosslinked polymer so obtained is subjected to secondary crosslinking at its surface by polyol and a cation (column 3, lines 30-53). The particle size is preferably between 150 to 800 μm (column 6, lines 46-49). A superabsorber with improved permeability properties and high retention capability is obtained by coating an aqueous solution of a polyol which has reacted with molecular groups near the surface, preferably with carboxyl groups, in the presence of a cation of a salt component with heating at 150 to 300^0C (column 3, lines 56-60).

The water absorbing polymer product to be surface crosslinked is obtained by polymerizing 55 to 99.99 wt% of a monounsaturated monomer having acid groups, where monomers containing carboxyl groups are preferred. Particularly preferred is a polymer product obtained by polymerization in the presence of crosslinkers of acrylic acid or methacrylic acid (column 4, lines 65-67; column 5, lines 1-11). Aqueous solutions of salts are preferably used as cation to crosslink carboxylate groups near the surface. Examples of polyvalent cations are cations of aluminum, iron, chromium and other transition metals. It is preferred to use aluminum salts and alums and their various hydrates (column 4, lines 42-61).

See example 1 for the retention (TB) and absorption under pressure (AAP) for a 0.9% saline solution of 28.5 g/g and 25 g/g respectively. Furthermore, 0.5 g of aluminum sulfate 14-hydrate and 1.0 g of ethylene glycol are used relative to 100 g of polymer powder, and 2.5 g of water is used to make the crosslinker solution. Depending on the solubility of both components i.e. polyol and cation, the solution is heated to 20 to 100^{0}C, preferably 20 to 60^{0}C. Separate, yet simultaneous metering of a solution of the polyol and a solution of the salt component is also possible if homogeneous distribution of both components is ensured and the material is subjected to a thermal subsequent treatment. (column 7, lines 19-26). Once the secondary crosslinker solution is mixed with the polymer particles, secondary crosslinking reaction is performed at temperatures ranging from 150^{0}C to 300^{0}C (column 7, lines 41-44).

Mertens et al differs with respect to sequence of addition of organic surface crosslinking agent and multivalent metal compound; concentration of aqueous multivalent metal compound / component; and silent with respect to properties of water resin particle and the composition i.e. average particle diameter of 300 to 500 μm and extraction rate of multivalent metal component; standard deviation of particle size distribution; moisture absorption blocking ratio; diffusion absorbency under load; humidification blocking ratio.

However, while present process claims are directed to addition of polyol followed by aqueous solution of multivalent metal component to particulate water absorbent resin and Mertens et al teach adding a mixture of organic crosslinking

agent and multivalent metal compound solution, attention is drawn to In re Burhans, 154 F.2d 690, 69 USPQ 330 (CCPA 1946), wherein court held that selection of any order of performing process steps is prima facie obvious in the absence of new or unexpected results.

With respect to concentration of aqueous multivalent compound / component, while Mertens et al's examples are directed to a concentration of multivalent metal component outside the claimed value, it is noted that exemplification is not a requirement for a proper 103 rejection. Given that, attention is drawn to Mertens et al's disclosure (see column 6, lines 61-65), which teaches that amount of water as solvent is preferably from 1 to 4 wt%. Therefore, it would have been obvious to use 1.0 g of water instead of 2.5 g per 100 grams of polymer product, in example 1 of Mertens et al, to give a concentration of multivalent metal compound / component of ≥ 0.40 with respect to a saturated concentration of the aqueous multivalent metal compound, absent evidence of unexpected results.

With respect to properties of water absorbent resin particle and composition, in light of the fact that prior art teaches / discloses essentially the same composition and process as that of the claimed, one of ordinary skill in the art would have a reasonable basis to believe that the water absorbent resin composition of prior art exhibits essentially the same properties. Since PTO cannot conduct experiments, the burden of proof is shifted to the applicants to

establish an unobviousness difference. See In re Fitzgerald, 619 F.2d 67, 205 USPQ 594 (CCPA 1980).

Even if properties of the water absorbent resin particle and composition of instant claims and prior art examples are not the same, it would still have been obvious to one of ordinary skill in the art to make water absorbent resin particle and composition having the claimed properties because it appears that the references generically embrace the claimed water absorbent resin particle and composition and the person of ordinary skill in the art would have expected all embodiments of the reference to work. Applicants have not demonstrated that the differences, if any, between the claimed water absorbent resin particle and composition and the water absorbent resin particle and composition of prior art give rise to unexpected results.

4. Claims 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mertens et al (WO 00/53644) and Hatsuda et al (US 6, 562, 879 B1).

The discussion with respect to Mertens et al in paragraph 3 above is incorporated here by reference. Furthermore, polymers are also used in absorber articles suitable for various purposes by mixing with paper, fluff or synthetic fibers.

Mertens et al is silent with respect to the wt% of absorbent resin composition to hydrophilic fiber.

However, Hatsuda et al teaches absorbent structures comprising, particulate water absorbent resin substantially similar to the particulate water absorbent resin of present claims, and fibrous material. The absorbent article comprises an absorbent layer including the absorbent structure (abstract). The absorbent structure is characterized by comprising water-absorbent resin powder and a fibrous material such as a hydrophilic fiber. The weight ratio of the water-absorbent resin powder and hydrophilic fiber is in the range of 20:80 to 90:10 (column 16, lines 42-56). The absorbent structure is interposed between a liquid permeable surface sheet and a liquid impermeable back sheet (column 17, 55-58). Therefore, it would have been obvious to use water absorbent resin in an amount of 20 wt% or more because Mertens et al contemplates using water absorbent resin in absorber articles by mixing it with fibrous material and Hatsuda et al teach weight ratio of particulate water absorbent resin and hydrophilic filler is in the range of 20:80 to 90:10.

Response to Arguments

5. Applicant's arguments, see page 4, lines 8-11, filed 12/28/2007, with respect to rejection of claims 1-6 under 35 U.S.C. 102(a) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hatsuda et al (US 6,562,879 B1); rejection of clams 1-4 under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Nakashima et al (US

2004/0106745 A1), have been fully considered and are persuasive. The rejection of claims 1-6 has been withdrawn. However, for the record it is noted that applicant indicated the rejection is Mertens in view of Hatsuda and/or Nakashima.

6. Applicant's arguments filed 12/28/2007 and 2/28/2007 have been fully considered but they are not persuasive. Specifically, applicant argues that (A) it is possible to compare parameters such as SFC in a resin wherein the multivalent metal component is increased, to a resin wherein the multivalent metal component has not been increased, when the resins have substantially similar CRC and art cited by examiner fails to acknowledge the relationship between SFC and extraction rate of the multivalent metal compound; (B) adding multivalent metal compound and the surface crosslinking agent simultaneously, as opposed to adding the multivalent metal compound after surface of the water absorbent agent has been crosslinked makes it difficult to extract a multivalent metal component from the resultant water absorbent resin composition; (C) concentration of the aqueous multivalent metal component to the saturated concentration of the aqueous multivalent metal component is 0.26 and not 0.40 or more; (D) concentration of the multivalent metal component contained in the mixed solution including the solution of aqueous multivalent metal compound and the organic surface cross-linking agent of Mertens et al is 1.1.3 wt% and is lower that at least 1.80 wt%; (E) multivalent metal compound in Mertens is added with the surface crosslinking agent before surface crosslinking, not after the surface of

the water absorbent resin has been crosslinked; and (F) percentages preferably of 1.0 to 4.0 wt% in Mertens et al relate to the amount of water, not the multivalent metal compound.

With respect to (A), attention is drawn to examples 5-6 (table 4) and examples 7-8 (table 5) of instant invention -

	SFC	M (wt%)	ΔM^{*}	$\Delta(SFC)^{**}$
Example 5	143	8.8	14	12
Example 6	135	7.4		
Example 7	147	6.8	3.5	6
Example 8	153	10.3		

$^{*}\Delta M$ = change in multivalent extraction rate

$^{**}\Delta(SFC)$ = change in SFC

As can be seen from the data, there does not appear to be a direct relationship between extraction rate of multivalent metal component and SFC. Given that, it is not convincing to compare SFC of the water absorbent resins, with substantially similar CRC, to ascertain the differences in extraction rate of multivalent metal component when trials are not back-to-back (side-by-side).

With respect to (B) and (E), attention is drawn to instant specification (paragraph bridging pages 59-60) wherein it is noted that mixing of particulate

water absorbent resin, the solution of multivalent metal component and organic surface crosslinking agent is not particularly limited. In addition, it is preferable to adopt a method in which a mixture of solution of multivalent metal component and organic surface crosslinking agent is mixed with the particulate water absorbent resin. Even, if it was not the preferred method, Mertens et al teaches that a superabsorber resin is obtained by coating a particulate absorber resin with aqueous solution of a polyol which has reacted with molecular groups near the surface, preferably with carboxyl groups i.e. surface of the resin is in fact coated with organic crosslinking agent.

With respect to (C) and (F), while the concentration of multivalent metal component is 0.26 in the example of Mertens, a prior art reference is used for all it discloses. Given that, it is noted that amount of water is used from 1.0 to 4.0 wt%. Replacing 2.5 g of water in example 1 with 1.0 g of water will give a concentration of multivalent metal compound / component of ≥ 0.40 with respect to a saturated concentration of the aqueous multivalent metal compound.

With respect to (D), using 1.0 g of water instead of 2.5 g of water in example 1 of Mertens et al will result in a concentration of the multivalent metal component contained in mixed solution including the solution of aqueous multivalent metal compound and the organic surface cross-linking agent of at least 1.8 ([X] = (S/T) * 100 = (0.5/(1.0 + 1.0 + 0.5)) * 100 = 20.0 wt%; and [Y] = [X] * (MW_{Al} * 2/$MW_{Al2(SO4)3}$) = 20.0 * (27 * 2/594.37) = 1.82).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KARUNA P. REDDY whose telephone number is (571)272-6566.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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